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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/475,526	12/30/1999	CHARLES R. YOUNT	042390.P6602	6450

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EXAMINER

KENDALL, CHUCK O

ART UNIT	PAPER NUMBER
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2122

DATE MAILED: 09/10/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/475,526

Applicant(s)

YOUNT ET AL.

Examiner

Chuck O Kendall

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 June 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) _____ is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-45 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____. 6) ☐ Other: _____

DETAILED ACTION

1. This action is in response to the application filed 06/20/03

Claims 21-45 have been examined.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

3. Claims 21, 22, 31, & 32 are rejected under 35 U.S.C. 102(e) as being anticipated by Hollander USPN 6,347,388 B1.

Regarding claims 21, & 31 a method, and system (see fig.1 for system) comprising:

generating a first test program to test the functionality of an integrated circuit (IC), the first test program including a test program population having a first set of instructions and data; executing the first test program;

evaluating a first set of coverage, data from the first test program to determine if the IC has been sufficiently tested (7:5-12), wherein evaluating the first set of coverage data comprises comparing the coverage data to a predetermined coverage requirement (5:32-37, see coverage data and cross coverage analysis); and generating a second program if the IC has not been sufficiently tested by the first test program (figure 2, 235 and column 9 lines 7-10), the second test program including an updated test program population having a second set of instructions and data being a mutation of the original population (8:33-38, see incremental testing, and development of test suites for

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verification and catching other bugs in system or other devices, and see for cross coverage for holes not caught by original test, and also refer to 15-20 where it shows tests being simulated for particular scenarios with regards to the limitation of updated test program population from Applicant's claims).

Regarding claims 22 the method of claim 21, further comprising:
executing the second test program (5:32-37, also refer to 8:60-67).

Regarding claim 32 system version, see rationale in claim 22.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 23, 24, 33 & 34 rejected under 35 U.S.C. 103(a) as being unpatentable over Hollander USPN 6,347,388 B1 in view of Hayes USPN 5,799,266.

Regarding claims 23, & 33, Hollander discloses all the claimed limitation as applied in claim 22. Hollander doesn't explicitly disclose generating a first abstract syntax tree. However Hayes does disclose this limitation. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify and or combine Hollander and Hayes to implement the instant claimed invention because, generating tests using syntax trees allows programmer to test all possible combination thereby achieving the desired results.

Regarding claim 24, method of claim 23 wherein generating the first test program comprises; generating a second abstract syntax tree (Hayes, 8:45-50 as understood by the examiner a test driver utilizes a syntax tree, therefore since art discloses a plurality of drivers examiner interprets a second abstract syntax tree to be inherent also see figure 3); a second set of instructions and for the second AST(figure 3, see tests attributes, functions and method definitions, 44,46,48) ; and translating the first AST into a first executable(figure 3, 66,68,70 also see 8:45-50);

Regarding claim 34 see reasoning in claim 24.

6. Claims 25-30, 36-40 & 43-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hollander USPN 6,347,388 B1 in view of Hayes USPN 5,799,266 and further in view of Miller et al USPN 6,175,948 B1 hereinafter Miller.

Regarding claims 25, & 35 method Hollander as modified discloses all the claim limitations as applied in claim 24. Hollander as modified doesn't explicitly disclose mutating a selected AST. However, Miller does disclose this feature fig 4, 408. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combining and or modify Hollander as modified with Miller to implement the instant claimed invention because, making an AST reusable makes generating tests more efficient.

Regarding claim 26, wherein mutating AST comprises removing a segment of the selected AST (figure 4,408 for reuse); and inserting a replacement into the selected AST (see 9: 45-50 for modifying model).

Regarding claim 27, see claim 24 for reasoning.

Regarding claim 28, method of claim 25 wherein mutating a AST comprises;

selecting the first and second AST into mutated AST (3:30-35, see integration and merging).

Regarding claim 29, see claim 27 for reasoning.

Regarding claim 30, see Hollander Figure 1, for coverage data.

Regarding claim 36, see claim 26 for reasoning.

Regarding claim 37, see claim 27 for reasoning.

Regarding claim 38, see claim 28 for reasoning.

Regarding claim 39, see claim 29 for reasoning.

Regarding claim 40, see claim 30 for reasoning.

Regarding claim 43, see claim 42 for reasoning.

Regarding claim 44, see claim 26 for reasoning.

Regarding claim 45, see claim 28 for reasoning.

Response to Arguments

7. Applicant's arguments filed 06/20/03 have been fully considered but they are not persuasive to overcome previous rejection of 4/24/03.

With regards to Applicant's argument in claims 21 and 31, Applicant argues that prior art doesn't teach generating a second program including an updated test program population having a second set of instructions and data being a mutation of an original population if an IC has not been sufficiently tested by a first test program. Examiner disagrees. Prior art in figure 2, 235 and column 9 lines 7-10, shows additional tests being created by the test generator, in accordance with analyzer results, which also require additional inputs (population) by the user.

Reasons for Allowance

8. The following is an examiner's statement of reasons for allowance: Claims 41-45 are in condition for allowance, because prior art does not teach or render obvious:

"... a feed back engine to build and update a population test program by generating an abstract tree (AST) for each test program.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

9. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

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Correspondence Information

10. Any inquires concerning this communication or earlier communications from the examiner should be directed to Chuck O. Kendall who may be reached via telephone at (703) 308-6608. The examiner can normally be reached Monday through Friday between 8:00 A.M. and 5:00 P.M. est.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Dam *can be* reached at (703) 305-4552.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3900.

For facsimile (fax) send to 703-7467239 official and 703-7467240 draft

Chuck O. Kendall

Software Engineer Patent Examiner

*Wi m
Primary Patent Examiner
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